



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

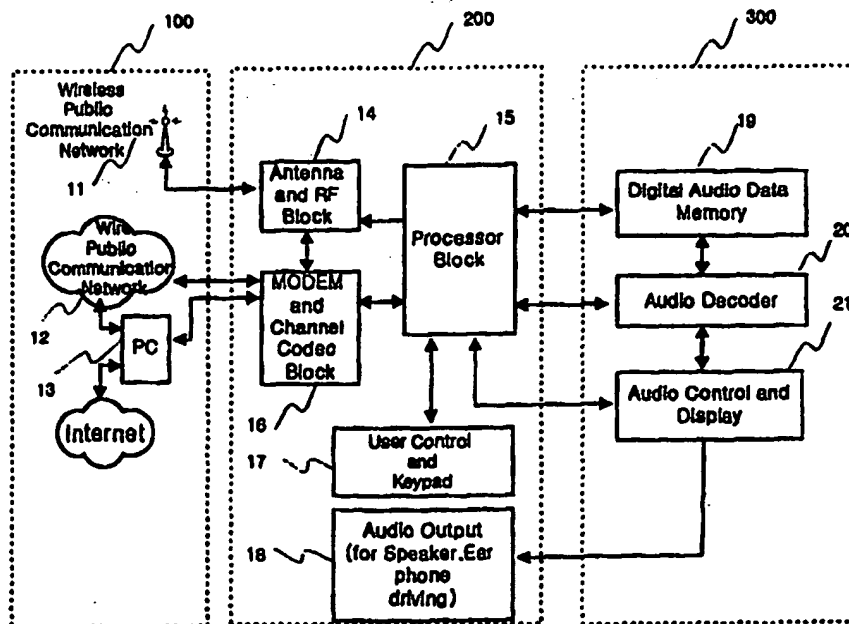
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(21) International Application Number: PCT/KR99/00800 (22) International Filing Date: 22 December 1999 (22.12.99) (30) Priority Data: 1998/56960 22 December 1998 (22.12.98) KR (71)(72) Applicant and Inventor: KIM, Jachan [KR/KR]; Kwangju Dong-gu, Sansudong 568-1, Duam-Town, Apt.107-1106, 501-090 (KR).		(81) Designated States: CN, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> <i>In English translation (filed in Korean).</i>

(54) Title: APPARATUS AND METHOD FOR STORING AND PLAYING BACK OF DIGITAL AUDIO DATA ON WIRELESS MOBILE TERMINAL

## (57) Abstract

This invention presents the combining idea of the wireless mobile terminal and the digital audio data player. This invention will reduce user's inconveniency with possessing above two products. In this invention, the function of storing digital audio data encoded by MP3 or AAC into the memory and the function of decoding the data to decoded original audio signal are added to a wireless mobile terminal. And using various methods that first method is PC interfacing method to connect with Internet, second method is requesting method of the digital audio data encoded by MP3 or AAC via the public communication network or data network that is wire or

wireless channel, third method is passive receiving method of the digital audio data transmitted from station, it is stored the digital audio data encoded by MP3 or AAC into the memory, decoded the digital audio data stored in the memory to decoded original audio signal. As result, using this invented apparatus, it will be implemented convenient mobile services of telephone and audio on demand (AOD) or music on demand (MOD). The main function of the invented apparatus is wireless mobile terminal, additional function is storing and playback of the digital audio data encoded by MP3 or AAC.



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## **Apparatus and method for storing and playing back of Digital audio data on wireless mobile terminal**

### **Technical Field**

This invention relates to combining technology of wireless mobile terminal and digital audio data player.

### **Background Art**

We want to communicate with others using wireless mobile terminal or listen to music using digital audio data player, must take two products inconveniently.

The present wireless mobile terminal for communication is consists of data transceiving function block, audio signal processing function block and control function block by keypad. And present portable digital audio data player is consists of playback module as basic function, data storage module and recording module. But there are no products providing two functions as single assembly.

Above mentioned the wireless mobile terminal includes cellular phone, PCS phone, IMT-2000 terminal, GSM terminal, wireless portable handset, hand phone and mobile phone for wireless communication of audio or data.

### **Disclosure of Invention**

Since it is added the function of storing and playing back of the digital audio data to the wireless mobile terminal by this invention, selectable usage of the digital audio player or the wireless mobile terminal is available in this invented apparatus.

In this invention, the wireless mobile terminal comprises memory for storing digital audio data, audio decoder, audio control and display module, audio signal output module. The memory for storing of the digital audio data is fixed or replaceable.

There are two method for storing of the digital audio data, first method is PC interfacing method to connect with Internet, second method is requesting and receiving method of the digital audio data via public communication network or data network that is wire or wireless channel, or passive receiving method of the digital audio data transmitted from station.

The digital audio data that are received and stored into the memory, will be decoded and played back to the decoded original audio signal using keypad operation by user's necessity.

In accordance with an embodiment of the present invention, the receiving and storing method of the digital audio data is as follows:

first, this invented apparatus is connected with public communication network via wire(12), the digital audio data are inputted to the modem block(16) by user's keypad operation(17), stored into the memory(19) by the processing of the processor block(15).

second, operation of the PC(13) connected with public communication network

via wire or Internet, provides the modem's block(16) with the digital audio data, this data will be stored into memory(19) by control of the processor block(15),

third, by the user's keypad(17), requesting and receiving of the digital audio data via the public wireless communication network, or passive receiving of the digital audio data transmitted from the audio providing station is performed, and then the digital audio data are stored into the memory(19),

fourth, the replaceable memory storing digital audio data is inserted and connected with the data interfacing connector.

The stored digital audio data by above methods will be decoded by decoder(20) and generated a audio signal to audio output(18) in accordance with the audio circuit control by the operation of keypad(17).

As result, using this invented apparatus, the mobile services of audio on demand(AOD) or music on demand(MOD) will be implemented.

### **Brief Description Of Drawing**

FIG. 1 is a block diagram showing the functional configuration of storing and playing back of Digital audio data on wireless mobile terminal.

### **Modes for Carrying out the Invention**

The storing and playing back part(300) of the digital audio data is consists of the digital audio data storage memory(19), audio Decoder(20), selecting control of

transceiving that wireless telephone function has priority over audio player in the case of detecting call signal, audio control and display(21). The processor block(15), user's controller, key pad(17) and audio output module(18) are common to be used in the function of wireless mobile terminal and audio player.

In accordance with an embodiment of the present invention, the fresh memory may be used for storing memory(19) of digital audio data. The memory types adequate for this embodiment are fixed memory, replaceable or combinational memory(19) for storing digital audio data. The MP3(MPEG-1 Layer 3) decoder, AAC(MPEG-2 Advanced Audio Coding) decoder, or MP3 and AAC decoder(20) are used for decoding of the digital audio data. The LCD display at present or LCD displaying selection menu of digital audio data is used as a display module(21). And the selected digital audio data is decoded and the audio signal is outputted to the audio output device(18) such as speaker or earphone.

The digital audio data comprises music, audio program for language education, narration and so forth that are coded by the MP3 or AAA coding algorithm.

### **Industrial Applicability**

Using this invention, it will be implemented convenient mobile services of telephone and audio on demand(AOD) by single apparatus.

## CLAIMS

1. A wireless mobile terminal including;

fixed or replaceable memory(19) for storing digital audio data encoded by MP3(MPEG-1 Layer 3) audio encoder or AAC(MPEG-2 Advanced Audio Coding) encoder; and

MP3 or AAC Decoder(20) for reading digital audio data stored in the memory and decoding the digital audio data to the decoded original audio signal.

2. The apparatus of claim 1 including;

interfacing means with PC for storing the digital audio data from Internet into the memory(19) mentioned in claim 1; and

interfacing means with public communication network (or data network) via wire or wireless channel for storing the digital audio data from Internet into the memory(19) mentioned in claim 1.

3. A Method for playing back to the original audio signal ; comprising the steps of;

interfacing with PC to connect with Internet as mentioned in claim 2;

receiving the digital audio data encoded by MP3 or AAC from Internet;

storing the digital audio data into the memory(19) mentioned in claim 1; and

decoding the digital audio data to the decoded original audio signal using the

decoder(20) mentioned in claim 1.

4. A Method for playing back to the original audio signal ; comprising the steps of;

requesting and receiving the digital audio data encoded by MP3 or AAC via public communication network (or data network) that is wire or wireless channel; or receiving the digital audio data encoded by MP3 or AAC that is transmitted from station; and

storing the digital audio data into the memory(19) mentioned in claim 1; or decoding the digital audio data stored in the memory to the decoded original audio signal using the decoder(20) mentioned in claim 1.

5. The apparatus of claim 1 comprising;

Antenna and RF Block(14) for communication function of wireless mobile telephone;

Modem and Channel codec Block(16);

Processor Block(15) for Signal Processing and Control function;

Fixed or replaceable memory(19) for storing digital audio data;

Decoder(20) for reading digital audio data stored in the memory and decoding the data to the decoded original audio signal;

Interfacing means with PC for receiving the digital audio data from Internet and storing the digital audio data into the memory;

Interfacing means with public communication network for receiving of the digital audio data via wire or wireless public telephone network (or data network) and storing of the digital audio data into the memory;

User control means and keypad(17) for the call operation of wireless mobile terminal, the data storing operation, and the playback operation of the digital audio data;

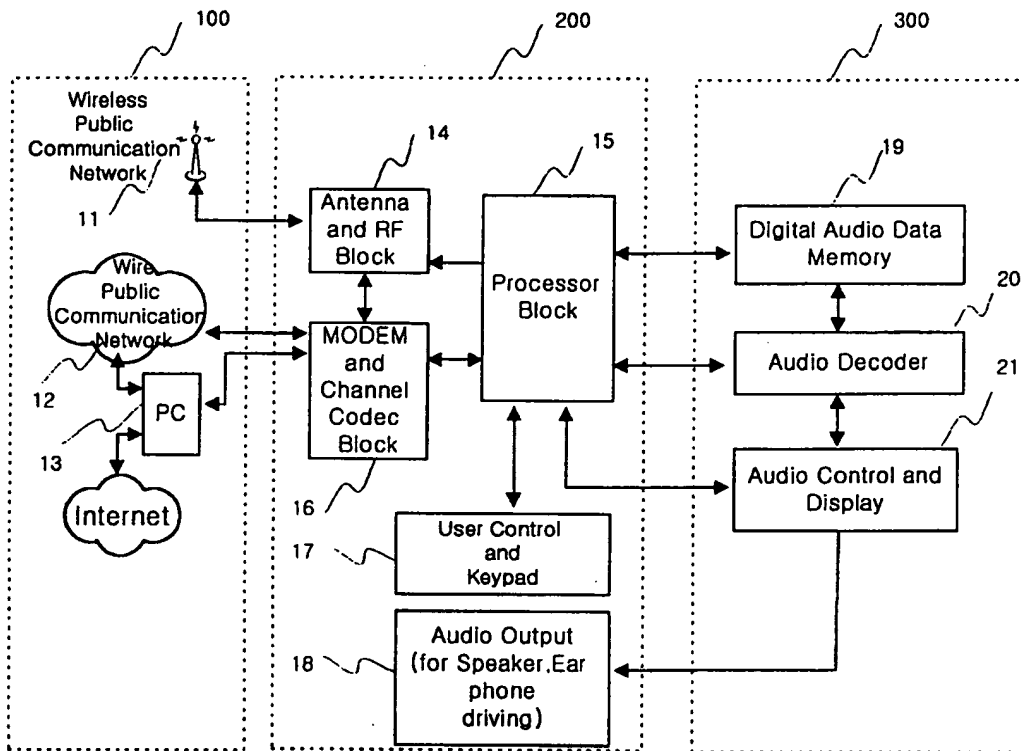
Audio control and display means(21) for control and display of wireless mobile terminal's call operation status and audio operation control status by keypad; and

Audio signal output means(18) for speaker or earphone to listen mobile terminal's voice and playback audio.

## DRAWING

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Figure 1



# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/KR99/00800

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
IPC7 H04B 1/40		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
IPC7 H04B 1/40, H04M 1/21		
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<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	KR 99-33726 A (JOON-SUNG, KIM) 15 MAY 1999, page 3 lines 11 - lines 48	1-5
X,P	KR 99-79660 A (DANAL CORP.) 5 NOVEMBER 1999, page 3 lines 10 - lines 39	1-5
A	US 5,577,190 A (AVID TECH. INC.) 19 NOVEMBER 1996, abstract	1
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